Department of Mathematics
University of Notre Dame

Jiayi Shen - University of Notre Dame

GRADUATE STUDENT SEMINAR

Guest Speaker: Jiayi Shen
University of Notre Dame

UNIVERSITY OF NOTRE DAME
College of Science
Mathematics

Date: Friday, May 3, 2024
Time: 11:00 AM
Location: 258 Hurley Bldg
Zoom URL: NA

Lecture Title:

Liftableness of torsion elements in $GL_n(\mathbb{Z})$

Abstract

Consider the representation $\mathrm{Out}(F_n) \to \mathrm{GL}_n(\mathbb{Z})$. We would like to answer the question whether all torsion elements in $\mathrm{GL}_n(\mathbb{Z})$ can be lifted to torsion elements in $\mathrm{Out}(F_n)$. We use a geometric approach towards torsion elements in $\mathrm{Out}(F_n)$ and use algebraic number theory to study torsion elements in $\mathrm{GL}_n(\mathbb{Z})$. For a matrix with prime order p where $p \leq 19$, it is always liftable. For $n \geq 22$, there always exists an order 23 matrix that can not be lifted to $\mathrm{Out}(F_n)$.